Preference Assessment for Outcomes of Deep Vein Thrombosis Using a Multimedia Approach

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Deep vein thrombosis (DVT) can be treated either with the combination of a thrombolytic drug (often streptokinase) and intravenous heparin, or with intravenous heparin alone. The addition of streptokinase reduces the incidence of postthrombotic syndrome (PTS), but increases the risk of bleeding, stroke and death. Recently, using decision analysis, O'Meara et al. (NEJM 1995:330;1864-9), showed that patient preferences are useful to determine which therapy is more favorable.

Several factors complicate assessment of patient preferences. The way a health state is presented can affect preferences toward that state. Further, the medium used may also limit preference assessment from being applied widely. Paper-based methods allow only a short and straight-forward presentation of a health state, while interview-based methods require a trained interviewer who may introduce variations or bias. Neither of these methods allows animation or graphical description of multiple and complex health states.

A potential approach that may improve the process of preference assessment is to use multimedia to present descriptions of the health states and measure preferences toward these states. Audio-visual presentations in the multimedia preference assessment methods would resolve many factors that have prevented a wider use of preference assessment.

We have developed a multimedia utility assessment program that describes the health states of either sequelae of DVT or complications of heparin or streptokinase treatment. These health states include mild and severe PTS and stroke. This program was implemented using the existing framework of IMPACT, a multimedia-based preference assessment program developed by our group (Lenert LA et. al. An Object-oriented Graphical Environment for Construction of Multimedia Preference Assessment Instruments, in Procedings 19th Annual Symposium on Computer Applications in Medical Care). The program used pictures and voices to describe mild and severe PTS and stroke. Health states were described and rated sequentially with all ratings for each health state being performed before moving on to the next. Subjects first used a visual analog scale to rate imagined quality in each health state before using the standard gamble (See Fig. 1).

We tested this program to measure preferences for these three outcomes in 30 young women and 30 randomly selected Internists from the Stanford Faculty, and then calculated the expected number of quality-adjusted life years (QALYs) using O'Meara's decision model. Women and physician groups had similar preferences for PTS and stroke. Seventy-seven percent of the subjects would accept an increased risk of death to avoid PTS (median utility 0.95). About 30% of the normal subjects and 23% of the physicians had preferences proving the optimal therapy to be the combination of streptokinase and heparin. However, the gains realized for those individuals are large and surpassed the gains for others who prefer therapy by heparin alone. Individualized therapy based on preferences resulted in 0.26 QALYs more than treatment with heparin alone and 0.13 more QALYs than treatment of all patients with heparin and streptokinase.

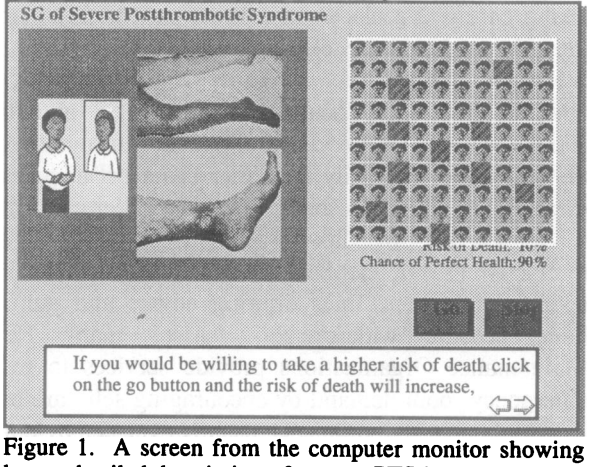

Figure 1. A screen from the computer monitor showing how a detailed description of severe PTS is presented and how preferences for severe postthrombotic syndrome are measured using the Standard Gamble method.

Substantial numbers of patients may have preferences favoring treatment of DVT with heparin in combination with streptokinase rather than heparin alone. Physicians often place an additional negative weight on iatrogenic causes of health states that may bias them against the use of streptokinase. Choosing therapy for DVT should be guided by formal or informal assessment of patient preferences. One way to do this may be to use a multimedia program similar to the one we will demonstrate in this session.

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